U.S. ARMY CHEMICAL MATERIALS AGENCY www.cma.army.mil

CMA NEWS | October 2007

CMA PROGRESS AT A GLANCE

- **Anniston Chemical Activity, Ala.,** Anniston Chemical Agent Disposal Facility work force safely processed 45,626 VX-filled 155mm projectiles and 27,802 gallons of liquid VX since disposal operations resumed in June.
- **Deseret Chemical Depot, Utah,** Tooele Chemical Agent Disposal Facility has safely disposed of 2,221 mustard agent-filled ton containers as of Oct. 21. Mustard operations began in August 2006.
- **Newport Chemical Depot, Ind.,** Newport Chemical Agent Disposal Facility has safely neutralized nearly 66 percent of the Newport agent stockpile. The United States has received credit, under the Chemical Weapons Convention, for destroying 1,287,183 pounds of the Newport stockpile . Workers safely resumed neutralization operations after completing specified training, reviewing operational procedures and following successful function testing of the reactor system.
- **Pine Bluff Arsenal, Ark.,** Pine Bluff Chemical Agent Disposal Facility (PBCDF) began processing VX rockets Oct.13, after a scheduled five-month outage following the elimination of all GB weapons. The Pine Bluff Chemical Activity safely transported the first enhanced onsite containers carrying VX-filled rocket to PBCDF on Oct. 11. Following completion of VX rocket disposal operations, there will be a changeover period to prepare for VX landmine disposal operations.

  A small quantity of mustard agent samples was shipped from Pine Bluff Arsenal to an off-post laboratory for analysis. This is the fourth of several shipments of mustard samples that will occur during the next several months. The mustard ton containers are the last munitions slated for destruction at PBCDF.
- **Umatilla Chemical Depot, Ore.,** Umatilla Chemical Agent Disposal Facility's (UMCDF) changeover status to VX rockets is approximately 25 days ahead of the 140-day working schedule as of Oct. 18. The first munitions are expected to be moved to the plant on Oct. 25, and rocket processing should begin soon after. UMCDF expects to complete rocket processing in early 2008 and continue processing other VX munitions through mid-2009.
- **Non-Stockpile Chemical Materiel Project's** Explosive Destruction System at Pine Bluff Arsenal, Ark., will destroy 1,200 recovered munitions stored at Pine Bluff Arsenal, mainly 4.2 inch mortars and German Traktor Rockets. The Pine Bluff Explosive Destruction System has now safely destroyed all of Pine Bluff's armed and fused chemical mortars as of Jan. 9, 2007.

HEAL POSES QUESTION:

Should TOCDF use Neutralization or Incineration?

Last month's Citizens' Advisory Commission on Chemical Weapons Demilitarization (CAC) meeting in Salt Lake City, Utah, included a presentation related to a proposed resolution to re-examine neutralization technology as a disposal option for the remaining chemical weapons stored at Utah's Deseret Chemical Depot (DCD). The presentation was requested by the CAC in July as a result of input from the environmental activist group HEAL (Healthy Environment Alliance) Utah.

CAC Commissioner Rosemary Holt, long associated with HEAL, said, "I think the presentation is overwhelmingly convincing that neutralization is just not a possibility. I commend you all for your professional commitment to what you're doing. I am very comfortable with what you presented."

Some potential issues with neutralization are the possibility of not meeting the treaty deadline and the overall cost of construction. It is estimated that neutralization operations would not be completed until at least 2023, with additional costs of approximately $1.5 billion. There would also be a risk in funding availability, as well as challenges with new facility startup/ shakedown and demonstration, mercury disposal operations and work force retention.

The U.S. Environmental Protection Agency had determined that industry mercury emissions in Utah in 2005 totaled 1,100 pounds. According to Joe Majestic, EG&G Deputy General Manager, "We're pretty certain that our total amount of emissions over the five years of operation of the Mustard Campaign will be less than 40 pounds."

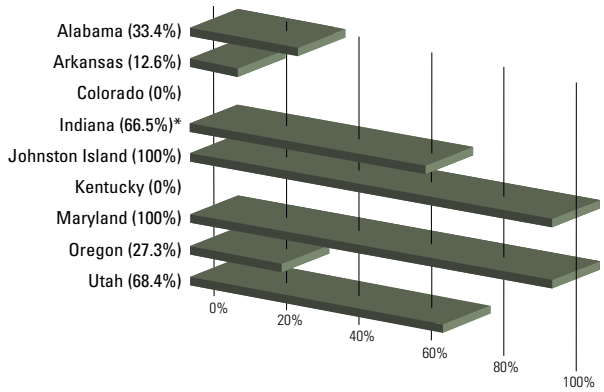
Majestic added, "We're putting significant amounts of resources, as is the Army, including both people and equipment dollars, to make sure mercury emissions from our process are as low as reasonably achievable."

Since 2003, EG&G and the U.S. Army have known that mercury is present in some of the ton containers or TCs stored at DCD. EG&G's strategy to deal with the mercury includes additional steps in the process; air monitoring and special furnace exhaust filtering to capture any elevated levels of the toxic metal, as well as a separate process to deal with the "heels" (residual solids) which settle in some of the TC's and cannot be processed through TOCDF's furnaces because of heel weight limits in the plant's operating permit.

DCD Public Affairs Officer, Alaine Grieser, added, "We want to ensure a safe environment not only for our workers and their families, but for everyone who breathes Utah air. I am confident that the best decision will be reached."

CMA - CREATING A SAFER TOMORROW

48.1 PERCENT OF U.S. CHEMICAL AGENT STOCKPILE DESTROYED
(as of Oct. 24 measured by original agent tonnage since entry into force – April 29, 1997)



** Newport's neutralized agent is not included in agent destruction totals until the hydrolysate is drained from its transportation containers at Veolia Environmental Services.*

HEEL TRANSFER SYSTEM TESTS IN PROGRESS

The Tooele Chemical Agent Disposal Facility (TOCDF) is running a series of tests to deal with the challenge of heavy solid and semi-solid heels in mustard ton containers (TCs). TOCDF is limited by its operating permit to process TCs through the Metal Parts Furnace (MPF) that have a heel weight less than or equal to 630 pounds. Operational experience has shown that the optimal heel weight for processing TCs is approximately 550 pounds. Subsequently, TOCDF officials have decided to use that as a target for treating TCs greater than 630 pounds.

For high-heel TCs, the Heel Transfer System (HTS) will be used to reduce the amount of heel by using a high pressure/hot water spray to soften the heel so that it can be transferred from the "parent TC" to an alternative TC. Once the transfer is complete, both TCs can be processed through the MPF.

So far, sampling efforts have found 1,599 TCs with high heels, and projections estimate a total of about 3,068 TCs will need to be treated by the HTS

TOCDF Operator, Parker Coates, visually inspects the heel content of a Ton Container prior to spraying. The visual inspection is done before and after the Heel Transfer System test to document the physical characteristics of the heel in the TC and the effectiveness of the spray and drain system.

CMA'S LEWISITE LADIES

BREAKING BONDS AND GENDER BARRIERS

Glass ceilings and stereotypes mean little to chemist Lucy Forrest and mechanical engineer Mary (Trish) Weiss, from the U.S. Army Chemical Materials Agency (CMA) at Aberdeen Proving Ground, Md. The two career federal employees recently were awarded a U.S. National Patent for developing a technology that improves the detoxification of blister agents in mobile disposal systems.

The patent title, "Chemical Detoxification of Vesicants and Related Chemical in Mobile Disposal Systems," sounds complicated enough to make anyone's head spin, but not for Forrest and Weiss. For four years, they worked on a four-person team to develop a patented process to break down the stubborn chemical blister agent lewisite and other arsenic-based compounds. Their co-recipients of the patent are Dr. Dupont Durst of the Edgewood Chemical Biological Center, and Kevin Morrissey with government contractor Science Applications International Corporation.

As employees at CMA's Non-Stockpile Chemical Materiel Project (NSCMP), Weiss and Forest sought safe, cost-effective and environmentally sound ways to dispose of old chemical warfare materiel. Before their work, the Army struggled with disposal of lewisite and other arsenical compounds.

"It really took a lot of coordination to find the reagent suitable for lewisite and the destruction device," Forrest explained, noting that finding the most efficient solution to break down lewisite took patience. "We had to find something that worked in the field as well as in the laboratory."

As the system manager for the Explosive Destruction System (EDS), a transportable technology NSCMP developed to destroy recovered chemical warfare materiel in a safe and environmentally sound manner, Weiss needed to prove that laboratory results translated into reality for on-site treatment.

Weiss and her colleagues successfully tested and treated lewisite and a World War II era German arsenic-based compound in the EDS, then began a mission at Pine Bluff Arsenal, Ark., in June 2006. Among the munitions awaiting destruction, are items whose safe disposal will rely on Weiss's engineering and Forrest's chemistry innovations.

According to a National Science Foundation report, women account for only nine percent of the engineering population. Statistics do not intimidate Weiss, the only female in her graduating class of 130 at North Carolina State University, where she earned her bachelor's degree, with honors, in mechanical engineering.

She continued to challenge herself academically, graduating last year from the esteemed Naval Postgraduate School, in the top 10 percent of her class, with a Master of Science in Program Management.

Weiss has nearly 23 years of chemical-biological defense hardware acquisition experience with the Army. When not finding more effective ways to destroy arsenic-based compounds, she gardens, and works with the Bel Air Kiwanis Club she helped co-found.

In addition to engineering, chemistry played a vital role in developing the patented process, which Weiss said she leaves up to Forrest.

"I try not to get too involved with all that chemistry stuff," Weiss joked. "Chemists and engineers speak very different technical languages. The biggest challenge for us was learning to effectively communicate our ideas, questions and concerns to each other to integrate the laboratory work with the real-world application to the EDS."

Forrest likes the chemical work and it shows. She serves as the task manager for monitoring, laboratory and decontamination research support for NSCMP programs, and explained why she enjoys science and chemistry.

"I love the technical part of my job, all aspects: research and monitoring, technology reviews, quality control," Forrest said. "It is such an interesting job because nothing is the same every day and there is always something to investigate."

According to the American Chemical Society, women make up a quarter of the chemists working within the federal government. Like Weiss, Forrest welcomes a challenge.

Forrest earned a bachelor's degree in chemistry from Lebanon Valley College and a Master of Science in Analytical Chemistry from Drexel University. She brings 23 years of experience in acquisition and research and development activities with the U.S. Army to her current position. Forrest was a member of the Women's Army Corps for two and a half years and then served as a chemical corps officer in the Army Reserve, until she retired in 1997.

Weiss recently moved to another Army organization to lead a development team working on indoor and outdoor smoke devices. Forrest plans to stay at CMA and looks forward to retirement in the next few years.

CMA News is produced by the U.S. Army Chemical Materials Agency Public Affairs Office.
For more information, call (410) 436-3629 or e-mail hqcmapao@apgea.army.mil.